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ECONOMICS AND ACCIDENTS: A COMMENTARY

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One of the problems of road safety measures is that the specific objective is rarely spelled out. What is it that we wish to achieve? Do we want to reduce the accident loss per vehicle distance traveled or per head of population? The answer may become a little more obvious if that very same question is rephrased: Do we wish to put additional miles into people's years or do we wish to put more years into people's lives? Progress against the one goal, unfortunately, does not imply progress against the other. In the period between the late 1920s and the late 1980s, the traffic fatality rate per 100,000 miles driven dropped by about a factor of 10 in the United States, but the average annual traffic death rate per 100,000 persons in 1987 in that country was about the same as some 60 years earlier (see Figure 1). So, it depends on the choice of criterion whether there has been success or failure.

That period shows major variations in the per capita fatality rate from year to year. Some of these fluctuations have remained puzzling and unexplained, and some reductions have typically been claimed to be the beneficial effect of some accident countermeasures such as mandatory seat belt use, speed limits, or the enforcement of blood-alcohol legislation.

More recently, however, there has been a growing body of evidence to indicate that the fluctuations may largely be due to economic ups and downs (Adams, 1985; Mercer, 1987; Partyka, 1984). This evidence not only seems to solve much of the puzzle but it also leaves little room for the alleged accident-reducing effects claimed for various supposedly effective accident countermeasures.

To avoid the ambiguities of interpretation that may have resulted from colinearity in multiple regression equations in earlier studies, I chose the unemployment rate as a percentage of the workforce as the single predictor variable and the per capita fatality rate as the criterion variable to be predicted (Wilde, in press b). Listed below are product moment correlations between annual unemployment rates and same-year per capita traffic death rates in seven different countries:

United States 1948–1987	−.68
Sweden 1962–1987	−.69
West Germany 1960–1983	−.83
Finland 1965–1983	−.86
Canada 1960–1986	−.86
United Kingdom 1960–1985	−.88
The Netherlands 1968–1986	−.88

The implication of such findings is two-fold. In simple before-after comparisons of the effect of some accident countermeasure, changes in the economy may operate as a serious confounding factor. For instance, most countries that introduced mandatory seat belt use in the mid 1970s experienced a subsequent reduction in the per capita traffic accident rate, but the reductions were as great if not greater in countries that did not pass such legislation (Adams, 1985). Note that the mid 1970s was the period of the oil crisis and its economically depressing aftermath.

Moreover, the underlying reason for the above correlations (which are probably attenuated by various sources of unreliability) should be considered. Whenever the economy is in a down period, the amount of accident risk people are willing to accept will be reduced because of the increased costs of accidents relative to real income. Also, the potential benefits associated with extensive and fast driving are diminished, because in a recession the amount of extra money that can be earned by driving faster and for longer distances is reduced.

If this reasoning is correct, it should be possible

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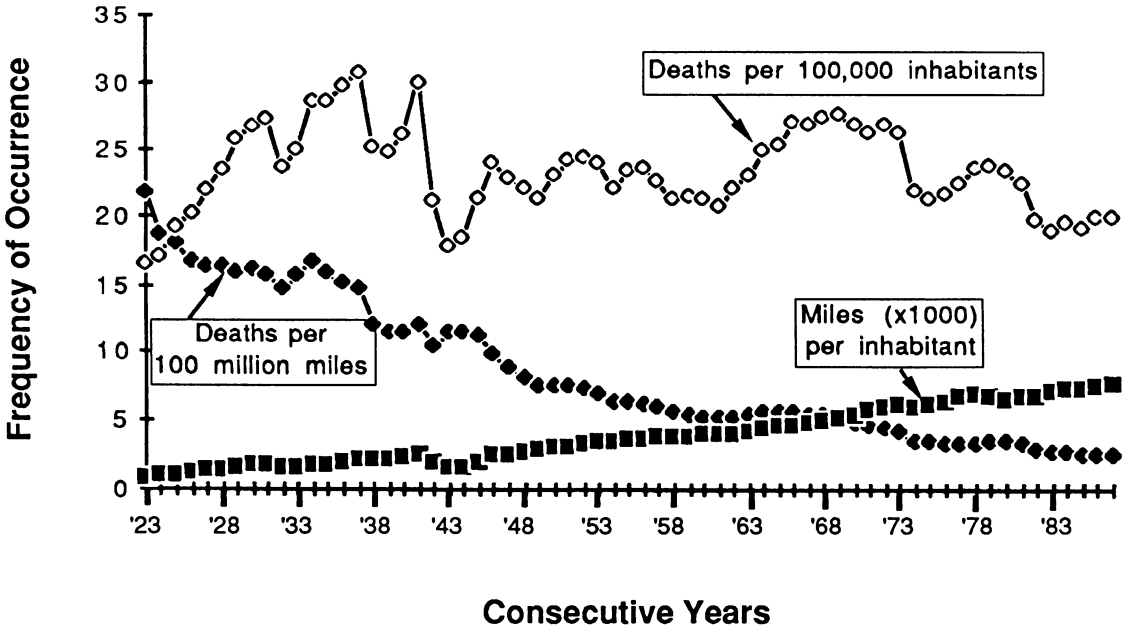

Figure 1. The traffic death rate per distance traveled, the traffic death rate per capita, and road distance traveled per capita in the United States, 1923–1987 (from Wilde, in press a).

to reduce the accident rate in good or bad economic times by means of incentives that make the fact of not having an accident more rewarding (e.g., through extending bonuses for accident-free task performance). And indeed, the available evidence indicates not only that this is true (Wilde, 1988a) but also that accident reductions can be very substantial (Fox, Hopkins, & Anger, 1987) and cost effective (Wilde, 1988a). Moreover, such effects appear to be reliable from one application to another. A recent literature review of 24 different studies did not find a single case in which incentive programs failed to obtain the intended effect upon safety (MacAfee & Winn, 1989).

So, if incentive programs are capable of having strong effects, the question arises what exactly should be rewarded: specific behaviors (like using the seat belt, being sober at the wheel, or driving at or below the speed limit) or the bottom-line criterion of not having an accident in a certain period of time? Rewarding safety, of course, should be expected to increase people's desire to be safe, and thus increase their attempts to achieve it by whatever means. On the other hand, rewarding seat belt use, for instance, should be expected to increase people's willingness to use seat belts but not their desire to be safe. Note that using the seat belt, being sober or driving at or below the speed limit is no guarantee of safety. Thus, "the risk is here that while the rewarded behavior may improve, other related safe behaviors may deteriorate" (MacAfee & Winn, 1989, p. 14). If that happens, a reduction in the rate of accidents would not be expected, but instead a change in their immediate causes would result. What would occur then may be called accident substitution or accident metamorphosis. To prevent this possibility, and for incentives to obtain their maximum effect on safety, they should be made contingent upon accident-free performance, not upon some specific behavior that may or may not lead to greater safety (Wilde, 1988b).

Past incentive programs for occupational and traffic safety have employed a great variety of rewards: money, merchandise, saving stamps, extra holidays, expression of social recognition, and free extension of the validity of the driver's license. Supposing that such programs were to be addressed to drivers in the general population and implemented on a nationwide basis, what kind of reward

would be expected to produce the greatest accident reduction?

Not surprisingly, there is some evidence that the greater the reward, the greater its accident-reducing effect (Wilde, 1988a). Under current circumstances, extending more substantial insurance discounts to reward accident-free driving and increasing insurance surcharges as a penalty for being at fault in accidents seems to offer the greatest potential reinforcement for having or not having an accident. One might, therefore, be inclined to approach the automobile insurance industry as a possible provider of the incentives that will greatly reduce the nation's traffic accident rate per head of population.

Such an approach, however, is unlikely to meet with a favorable response. The automobile insurance industry is not in the business of reducing accident risk but instead aims to make a profit on people's desire to insure themselves against the consequences of accidents (Grey, 1989). A sizeable reduction in the accident rate would not be in the lasting interest of the insurance industry, because people would feel a lesser need to protect themselves against accident consequences. The invention of an unsinkable ship or a car that cannot crash would spell disaster for insurers. Thus, at least up to a point, the higher the accident rate, the greater the opportunity for profit for insurance companies. It may be noticed that the same holds for still another major economic force: the automobile manufacturing and repair industry.

Moreover, it can be argued that the very fact that automobile accident insurance exists increases the automobile accident rate, because without the availability of insurance fewer people would be willing to drive the way they do or to drive at all. The availability of insurance against a particular type of accident is likely to reduce the reluctance to expose oneself to the risk of that type of accident, and consequently that type of accident may become more frequent. So, the very existence of automobile insurance may have the effect of increasing the size of the problem it sells protection against.

Be that as it may, for those among us who wish to reduce a nation's accident rate per head of population, the following question arises: From what source of funds can society obtain the resources for incentive programs for the purpose of accident prevention? This, of course, is a political question. And as the per capita accident rate has been found to be very much under the control of economic variables, it seems to follow that policy making for effective safety management is mainly a matter of political economy.

There are more obstacles to instituting an effective road safety policy than the ones already mentioned. One of these is that governments, for the sake of public relations, often have a stronger desire to be seen doing something about the accident problem than to actually do something about it. This is not surprising in view of the fact that some major economic forces have no true interest in accident reduction and that the general public, apart from an occasional outcry from some advocacy group or other, does not exert strong and persistent pressure on governments to enhance safety. In fact, if people in general wanted more safety than they experience, they would not wait for government action. Rather, they would adopt more prudent driving styles on their own accord (Wilde, 1986).

What then can be proposed by the community of road safety researchers and practitioners to governments in order for governments to raise public interest in safety and thus help governments exchange a predominantly public relations interest for a true desire to bring about a substantial reduction in the actual substance of the traffic safety problem?

Well, it has been noticed that incentives for accident-free driving have a strong motivating effect upon the members of the driving population: Their desire for safety is enhanced, they act accordingly, and the accident rate drops. There is also evidence in the available literature that some incentive programs are more effective than others in reducing the accident rate. It has been noticed, too, that discounts and surcharges in automobile insurance may be the most efficient contingencies in shaping accident-free behavior. Furthermore, it has been argued that the characteristics of the more effective incentive programs are more likely to be featured in future insurance schemes if automobile insurance

were run by government instead of by private business (Wilde, 1988a).

There is still another argument in favor of nationalizing automobile insurance for the purpose of enhancing safety. When inflation causes claim costs to rise, there are three options for action to cope with this in case insurance is placed under public responsibility. First, the government might impose higher insurance fees on the electorate. Second, it might absorb the increased costs through other tax revenues. Third, it might make more serious attempts to reduce the accident rate.

Because the third option would seem to be the most appealing (or the least unattractive) to a government that wishes to stay in power and because most governments seem to wish to do exactly that, an increase in government effort in the pursuit of road safety would be the likely result. Nationalized automobile insurance, therefore, offers hope for more energetic safety management by government and for stronger motivation to avoid accidents in the driving population.

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